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gum to the subfamily Coronulinæ as defined by Gruvel,[2] being most closely related to the genera *Tubicinella* Lam., which lives on the skin of whales, and *Stephanolepas* Fischer, a barnacle which lives imbedded in the plates of *Thalassochelys imbricata*. Both of these have the wall more or less tubular and conspicuously annulated externally. In *Stomatolepas* the wall is depressed and broadly bowl-shaped, and covered externally with a mass of thin-walled cells.

HENRY A. PILSBRY.

THE AGE OF SPEED SIRES

The contribution by Professor F. R. Marshall in THE AMERICAN NATURALIST for January, 1909, on the age of speed sires, escaped my notice until recently called to my attention. In that article Professor Marshall refers to the fact that I found the average age of trotting sires to be 10.43 years, and that by taking all sires in four generations of ancestors of 2:10 trotters I found the average age at approximately 14 years.

Professor Marshall objects to this comparison as not being a fair one on the ground that by going back four generations from our 2:10 trotters we go back into the formative period of the breed. This formative period, he asserts, followed the descent from Hambletonian 10, foaled in 1849, and involved his sons, which were used largely in the stud until old age. This he holds produced an abnormal number of old sires at that period of history, and that by including them in my tables I was drawing unwarranted conclusions from what was a mere incident. This he reinforces by showing that the *immediate* sires of 242 trotters in the 2:10 list were of the same age that I found for the normal breeding age of 1,000 cases.

In this matter Professor Marshall labors under a misapprehension. The average age of 10.43 years for sires which I found was the average as it existed in the "formative period" from 1840 to 1890. The "Register" from which they were taken was published in 1892 and contained an alphabetical list of all standard horses from the earliest date up to immediately before 1892. The tabulation was taken alphabetically from the index and the 10.43 is an accurate representation of what occurred when the grandsires, great-grandsires and great-great-grandsires of our 2:10 trotters were living and being bred.

There is, in this matter, food for profound thought, and, without being too accurate in decimals, I will briefly state the situation as it exists. The immediate sires of our 2:10 trotters are of an average age of 10.4 years. The grandsires are the immediate sires of the sires and dams of 2:10 trotters, and as immediate sires they should be 10.4 years of age, which was the average age of sires at the time they became sires in these pedigrees. But they are not. In these pedigrees they are 12.5 years of age. Evidently something has happened to disturb the normal conditions.

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[2] "Monographie des Cirrhipèdes ou Thécostracés," pp. 9, 270.

Again, the great-grandsires were the immediate sires of the grandsires, and they became such when the Hambletonian family was breeding at 10.4 years between generations. But they did not become sires in these pedigrees at their own average age at reproduction, but at 13.5 years. Going back one more generation in these pedigrees we find the sires to be 14.5 years, going another generation we find them at 15 years, and going still another generation we find a total of 467 horses being sires at an average age of 15.98 years!

Certainly, no one in his senses will believe that horses were ever bred in this or any other country at such average ages as these for any considerable body of them. Something extraordinary has occurred, and that something deserves careful thought and a reasonable explanation. That this matter is really extraordinary I will illustrate by calling attention to another feature. Some of the horses which appear as sires in the different generations were sent to the race track, while others were never raced. When a horse is raced, he spends his early years on the race track and is retired to the stud after his racing career is over. As a consequence, of two brothers, one of which went to the track and the other of which went directly to the stud, the one which is raced becomes a sire at the higher average age, and they should appear so in these pedigrees. But they do not. The ages previously given are the ages of the sires which had no standard records. The sires with records which appear in these pedigrees appear in each and every generation at an average age of less than 10 years.

Now, why is this? No reference to a formative period is an explanation when both kinds of horses were living and breeding at the same time. In the best pedigrees, those horses which had standard records appear at less than the average breeding age, while those which had no records appear at about four years above the average breeding age.

CASPER L. REDFIELD.